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OM nucleic - nucleic search, using sw model

Run on: June 17, 2003, 11:16:03 ; Search time 221.672 Seconds

(without alignments)  
10331.847 Million cell updates/sec

Title: US-09-807-933B-2

Perfect score: 1017  
Sequence: 1 atgaagttattactatgc.....caggtgtcagaataataa,1017

Scoring table: IDENTITY NUC  
Gapop 10.0 , Gapext 1.0

Searched: 2185239 seqs, 112599159 residues

Total number of hits satisfying chosen parameters: 4370478

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%  
Listing first 45 summaries

Database : N Geneseq,101002.\*

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2: /SID2/gcgdata/geneseq/geneseqn-emb1/NA1981.DAT:*
3: /SID2/gcgdata/geneseq/geneseqn-emb1/NA1982.DAT:*
4: /SID2/gcgdata/geneseq/geneseqn-emb1/NA1983.DAT:*
5: /SID2/gcgdata/geneseq/geneseqn-emb1/NA1984.DAT:*
6: /SID2/gcgdata/geneseq/geneseqn-emb1/NA1985.DAT:*
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23: /SID2/gcgdata/geneseq/geneseqn-emb1/NA2001B.DAT:*
24: /SID2/gcgdata/geneseq/geneseqn-emb1/NA2002.DAT:*
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Prod. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	1017	100.0	1017	21	AAA62726
2	1017	100.0	1017	24	AA143244
3	763	75.0	1101	21	AAA62727
4	763	75.0	1101	24	AA143245
5	594.6	58.5	1043	21	AAA62732
6	594.6	58.5	1043	24	AA143250
7	519.2	51.1	1083	21	AAA62728
8	519.2	51.1	1083	24	AA143246
9	417.6	41.1	1017	21	AAA62729

10	417.6	41.1	1017	24	AA143247
11	413	40.6	1164	21	AAA62730
12	413	40.6	1164	24	AA143248
13	304.2	29.9	1041	21	AAA62731
14	304.2	29.9	1041	24	AA143249
15	189.4	18.6	1473	12	AAQ14857
16	189.4	18.6	1473	13	AAQ26407
17	189.4	18.6	1473	13	AAQ26382
18	189.4	18.6	1473	13	AAQ25933
19	189.4	18.6	1473	13	AAQ29935
20	189.4	18.6	1473	14	AAQ49942
21	189.4	18.6	1473	16	AAZ60179
22	189.4	18.6	1473	19	AAV16103
23	187.8	18.5	1473	14	AAQ41733
24	185.2	18.2	984	19	AAV16105
25	181.2	17.8	927	17	AAV16062
26	181.2	17.8	1423	17	AAT39049
27	181	17.8	960	17	AAT39047
28	180.8	17.8	922	19	AAV15073
29	180	17.7	894	17	AAT39061
30	178.8	17.6	928	19	AAV15074
31	173.8	17.1	1132	17	AAT39053
32	169.6	16.7	922	19	AAV15072
33	165.4	16.3	1154	17	AAT39048
34	162.2	15.9	913	17	AAT39051
35	160.4	15.8	885	17	AAT39075
36	160	15.7	915	19	AAV15075
37	157.8	15.5	1261	19	AAV23748
38	154.8	15.2	925	19	AAV15076
39	153.6	15.1	1058	13	AAQ26405
40	153.6	15.1	1060	12	AAQ14856
41	153.6	15.1	1060	13	AAQ26380
42	153.6	15.1	1060	13	AAQ25932
43	153.6	15.1	1060	13	AAQ29934
44	153.6	15.1	1060	13	AAQ30072
45	153.6	15.1	1060	13	AAQ31181

#### ALIGNMENTS

```
RESULT 1
ID AAA62726 strand: DNA; 1017 BP.
AC AAA62726;
DT 25-SEP-2000 (first entry)
DE Endoglucanase nucleotide sequence 1.
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff; ss.
XX
OS Rhizopus oryzae.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
XX Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX WPI, 2000-365117/31.
XX DR P-PSDB; AAB09621.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
```

PT conditions for production of paper pulp and animal feedstuffs -  
 XX Claim 44; Page 104-105; 180pp; Japanese.

CC This sequence encodes an endoglucanase protein. The invention relates  
 CC to an endoglucanase of fungal origin which can completely break down  
 CC purified cellulose at a concentration of less than 1mg protein/litre,  
 CC and produces more than 50% breakdown of cellulose at pH 8.5. The  
 CC invention includes endoglucanase protein sequences (see  
 CC AAB09825-B09830), endoglucanase nucleotide sequences (see  
 CC AAB09825-B09830), and primers (AAB62733-A62802) which are used in the  
 CC identification of the endoglucanase sequences, and in the construction of  
 CC vectors containing the polynucleotides. The endoglucanase enzymes are  
 CC used for the production of pulp for papermaking and for the production of  
 CC animal feedstuffs.

XX Sequence 1017 BP; 240 A; 250 C; 235 G; 292 T; 0 other;

Query Match 100.0%; Score 1017; DB 21; Length 1017;  
 Best Local Similarity 100.0%; Pred. No. 2.6e-299;  
 Matches 1017; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 ATGAAGTTTATTAATTAATGCTCTTCCGCTCTCTGCTCTGCGCCCTCGGTACTGAATG 60  
 DB 1 ATGAAGTTTATTAATTAATGCTCTTCCGCTCTCTGCTCTGCGCCCTCGGTACTGAATG 60  
 QY 61 GCTCTGCTGCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 120  
 DB 61 GCTCTGCTGCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 120  
 QY 121 CCTACTGTTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 180  
 DB 121 CCTACTGTTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 180  
 QY 181 CTTCCTCTGAG 240  
 DB 181 CTTCCTCTGAG 240  
 QY 241 GCTGCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 300  
 DB 241 GCTGCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 300  
 QY 301 AAGACTCACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 360  
 DB 301 AAGACTCACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 360  
 QY 361 AATATTTCCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 420  
 DB 361 AATATTTCCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 420  
 QY 421 TGCTGATGAGGCTGCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 480  
 DB 421 TGCTGATGAGGCTGCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 480  
 QY 481 TGTAAACAAGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 540  
 DB 481 TGTAAACAAGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 540  
 QY 541 GGTAAACAAGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 600  
 DB 541 GGTAAACAAGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 600  
 QY 601 GGTAAACAAGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 660  
 DB 601 GGTAAACAAGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 660  
 QY 661 GAACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACT 720  
 DB 661 GAACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACTTACT 720  
 QY 721 ACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 780  
 DB 721 ACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 780

QY 781 GATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 840  
 DB 781 GATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 840  
 QY 841 TCAAGATACGGTGTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 900  
 DB 841 TCAAGATACGGTGTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 900  
 QY 901 GCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 960  
 DB 901 GCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 960  
 QY 961 AAGGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 1017  
 DB 961 AAGGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 1017

# RESULT 2

AA13244  
 ID AA13244 standard; DNA; 1017 BP.

AC AA13244;

DT 22-AUG-2002 (first entry)

DE Rhizopus arrhizus endoglucanase-related coding sequence 1.

KM Zygomycetes-originated endoglucanase; cellulose binding domain;  
 KW fibre processing; waste paper de-inking; paper pulp; ds; gene.

XX Rhizopus arrhizus.

PN WO200242474-A1.

PD 30-MAY-2002

PF 21-NOV-2001; 2001WO-JP10188.

PR 21-NOV-2000; 2000JP-0354296.

PA (MEIJ) MEIJ SEIKA KAISHA LTD.

PI Nakane A, Baba Y, Koga J, Kubota H;

DR WPI; 2002-471729/50.

DR P-PDB; AAO15052.

PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,  
 with effect of endoglucanase activity enhanced in processing fibers,

PT deinking waste paper and improving freeness of paper pulp -

XX Example 10; Page 56-58; 109pp; Japanese.

CC The invention comprises the amino acid and coding sequences of  
 CC zygomycetes-originated endoglucanase enzymes lacking the cellulose  
 CC binding domain. The zygomycetes-originated endoglucanase enzymes of the  
 CC invention have enhanced endoglucanase activity. The zygomycetes-  
 CC originated endoglucanase enzymes of the invention are useful for  
 CC processing fibres, de-inking waste paper and improving the freeness of  
 CC paper pulp - which is particularly applicable in detergent compositions.  
 CC The present DNA sequence represents an endoglucanase-related gene  
 CC sequence of the invention.

XX Sequence 1017 BP; 240 A; 250 C; 235 G; 292 T; 0 other;

Query Match 100.0%; Score 1017; DB 24; Length 1017;  
 Best Local Similarity 100.0%; Pred. No. 2.6e-299;  
 Matches 1017; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 ATGAAGTTTATTAATTAATGCTCTTCCGCTCTCTGCTCTGCGCCCTCGGTACTGAATG 60  
 DB 1 ATGAAGTTTATTAATTAATGCTCTTCCGCTCTCTGCTCTGCGCCCTCGGTACTGAATG 60

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QY 61 GCCTGCTGCTGAATGAGCAATTTGTATGTGCAATGTGTGCTTAAGAACTGGAATGGC 120
DB 61 GCCTGCTGCTGAATGAGCAATTTGTATGTGCAATGTGTGCTTAAGAACTGGAATGGC 120
QY 121 CCTACTGTTGTGAATCTGGATCCACTGTAAAGTAAAGCAAGTACTACTCAATGT 180
DB 121 CCTACTGTTGTGAATCTGGATCCACTGTAAAGTAAAGCAAGTACTACTCAATGT 180
QY 181 CTTCCCTCTGGAAGCAAGTGGCAATTAATCTTGTAAAGTCTCAAGAAAGTACACT 240
DB 181 CTTCCCTCTGGAAGCAAGTGGCAATTAATCTTGTAAAGTCTCAAGAAAGTACACT 240
QY 241 GGTGCTCAAGAAAGTACTACCCGCTGCTAATTAATAAGCACTAGCTCTGCTAG 300
DB 241 GGTGCTCAAGAAAGTACTACCCGCTGCTAATTAATAAGCACTAGCTCTGCTAG 300
QY 301 AAGACTACAACTGTGTCGAAGCTTCACCCCTTCTAAGTCTAGCTCTCAAGCGC 360
DB 301 AAGACTACAACTGTGTCGAAGCTTCACCCCTTCTAAGTCTAGCTCTCAAGCGC 360
QY 361 AAATATTCGGCTGCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 420
DB 361 AAATATTCGGCTGCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 420
QY 421 TGGCTGAAGAGCCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 480
DB 421 TGGCTGAAGAGCCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 480
QY 481 TGTAAACAAGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 540
DB 481 TGTAAACAAGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 540
QY 541 GGTAAACAGTACATGTGTAAGCAACAACCTTGGGCTGTAACGCAACCTTGGCT 600
DB 541 GGTAAACAGTACATGTGTAAGCAACAACCTTGGGCTGTAACGCAACCTTGGCT 600
QY 601 GGTTCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 660
DB 601 GGTTCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 660
QY 661 GAACCTACTTCACTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 720
DB 661 GAACCTACTTCACTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 720
QY 721 ACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 780
DB 721 ACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 780
QY 781 GGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 840
DB 781 GGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 840
QY 841 TCAAGTACAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 900
DB 841 TCAAGTACAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 900
QY 901 GCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 960
DB 901 GCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 960
QY 961 AAGGAAGTACAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1017
DB 961 AAGGAAGTACAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1017

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## RESULT 3

AAA62727 standard; DNA; 1101 BP.

AAA62727;

25-SBP-2000 (first entry)

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XX Endoglucanase nucleotide sequence 2.
DE Endoglucanase, cellulose breakdown; produce pulp; papermaking;
XX animal foodstuff; ss.
KW Rhizopus oryzae.
XX WO200024879-A1.
XX 04-MAY-2000.
XX 25-OCT-1999; 99WO-JP05884.
XX 23-OCT-1998; 98JP-0302387.
XX (MEIJU) MEIJI SEIKA KAISHA LTD.
XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
XX Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX WPI; 2000-365117/31.
XX P-PSDB; AAB09822.
XX Endoglucanases of fungal origin with high activity under alkaline
XX conditions for production of paper pulp and animal feedstuffs -
XX Claim 44; Page 108-110; 180pp; Japanese.
XX
XX This sequence encodes an endoglucanase protein. The invention relates
XX to an endoglucanase of fungal origin which can completely break down
XX purified cellulose at a concentration of less than 1mg protein/litre,
XX and produces more than 50% breakdown of cellulose at pH 8.5. The
XX invention includes endoglucanase protein sequences (see
XX CC AAB09825-B09830), endoglucanase nucleotide sequences (see
XX CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
XX identification of the endoglucanase sequences, and in the construction of
XX vectors containing the polynucleotides. The endoglucanase enzymes are
XX used for the production of pulp for papermaking and for the production of
XX animal foodstuffs.
XX
XX Sequence 1101 BP; 268 A; 258 C; 257 G; 318 T; 0 other;
XX
XX Query Match 75.0%; Score 763; DB 21; Length 1101;
XX Best Local Similarity 90.3%; Pred. No. 6, 9e-222;
XX Matches 858; Conservative 0; Mismatches 35; Indels 57; Gaps 2;
QY 68 CTGCTGAATGTAGCAATTTGTATGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 127
DB 209 CTTTGTGAATGTAGCAATTTGTATGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 268
QY 128 GTTGTGAATCTGATTCACCTGTAAAGTAAAGCAAGTACTGCTCAATGTCTTCCCT 187
DB 269 GTTGTGAATCTGATTCACCTGTAAAGTAAAGCAAGTACTGCTCAATGTCTTCCCT 328
QY 188 CTGGAAGCAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 247
DB 329 CTGGAAGCAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 375
QY 248 ACAAGAGACTACTACCGCTGCTCAATTAAGAAAGTACCACTGCTGCTGCTGCTGCT 307
DB 376 -----ACTACCACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 403
QY 308 CAAGTGTGCAAGAGCTTCACCCCTTCTAAGTCTGCTGCTGCTGCTGCTGCTGCTGCT 367
DB 404 CAAGTGTGCAAGAGCTTCACCCCTTCTAAGTCTGCTGCTGCTGCTGCTGCTGCTGCT 451
QY 368 CCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 427
DB 452 CCATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 511
QY 428 AGGCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 487

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OY 908 GTAATGAGATTCACTGTTCAAGAGCTGATTAACCAAGCAGTACGTTCAAGGAG 967
DB 992 GTAAATGAGATTCACTGTTCAAGAGCTGATTAACCAAGCAGTACGTTCAAGGAG 1051
OY 968 TTACCTGTCCTAAGAAATCAACGCGCAAGACAGTGTTCAGAAAAATA 1017
DB 1052 TTACCTGTCCTAAGAAATCAACGCGCAAGACAGTGTTCAGAAAAATA 1101

RESULT 5
AAA62732 standard; DNA; 1043 BP.
AC AAA62732;
DT 25-SEP-2000 (first entry)
DE Endoglucanase nucleotide sequence 7.
DX Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KM animal foodstuff; 88.
XX Rhizopus oryzae.
OS MO200024879-A1.
PN 04-MAY-2000.
PD 25-OCT-1999; 99WO-JP05884.
PF 23-OCT-1998; 98JP-0302387.
PR (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX WPI; 2000-365117/31.
DR Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -
XX Claim 44; Page 132-134; 180pp; Japanese.
XX This sequence encodes an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX Sequence 1043 BP; 212 A; 370 C; 291 G; 170 T; 0 other;
SQ

Query Match 58.5%; Score 594.6; DB 21; Length 1043;
Best Local Similarity 74.0%; Pred. No. 1.4e-170;
Matches 753; Conservative 0; Mismatches 264; Indels 0; Gaps 0;

OY 1 ATGAAGTTATTAATGATGCTCTTCCTGCTCTGCTCGCCCTCGTACTGAATG 60
DB 16 ATGAAGTTATTAATGATGCTCTTCCTGCTCTGCTCGCCCTCGTACTGAATG 75
OY 61 GCTCTGCTGCTGAATGATGCTGATGCTGATGCTGATGCTGATGCTGATGCTG 120
DB 76 GCTCTGCTGCTGAATGATGCTGATGCTGATGCTGATGCTGATGCTGATGCTG 135
OY 121 CTTACTGTTGTAATCTGATCCTGTAAGTAAGCAAGTACTACTCAATGT 180
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DB 136 CCCACTGCTGCGAGAGCGGCTCGACTGCAAGTCTCGAATGATTAATCAACGACGTC 195
OY 181 CTTCCCTCTGAGAGAGTGGCAATTAATTTCTGAAAGTCTCAAGAAAGTACTACT 240
DB 196 CTGCCGAGCGCTCTCTCGGAAACAAAGTCAGAGTGGGCCCAAGAAAGCAAGAC 255
OY 241 GCTGCTCAAAAGAGTACTACTACCGCTGCTCAAAAAGTACTACACTCTCTGTAAG 300
DB 256 GCTGCCCAAGAAAGCAAGCAAGACCGCGCTCAAGAAAGTACTACACTCTCTG 315
OY 301 AAGACTACAACTGTGTCAGAAAGCTTCACCCCTTCACTAGCTCTAGCTTCAGCGGC 360
DB 316 AAGACCAAGACCGTGGCCAAAGCTTCGACTCGGTCCAACTCGAGCAGCTGCTTGGGA 375
OY 361 AATATTCGCTGTCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 420
DB 376 AAGTACAGGCTGTCAAGCGGTGCGTACGCGCAAGCGGTGCTACCCGCTACGCGGAC 435
OY 421 TGCTGTAAGGCTCCCTGTAAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 480
DB 436 TGCTGTAAGGCTCCCTGTAAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 495
OY 481 TGTAACAAAGATGTGTCACTGCTCTGTAAGTGTGCTGCTGCTGCTGCTGCTGCT 540
DB 496 TGTAACAAAGATGTGTCACTGCTCTGTAAGTGTGCTGCTGCTGCTGCTGCTGCT 555
OY 541 GGTAACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 600
DB 556 GGTAACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 615
OY 601 GGTAACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 660
DB 616 GGTAACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 675
OY 661 GAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTA 720
DB 676 GAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTAATTA 735
OY 721 ACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 780
DB 736 ACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 795
OY 781 GGTAACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 840
DB 796 GGTAACTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 855
OY 841 TCAAGTACGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 900
DB 856 TCAAGTACGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATG 915
OY 901 GCTGTTGTAATGAGATTAATTAATTAATTAATTAATTAATTAATTAATTAATTA 960
DB 916 GCTGTTGTAATGAGATTAATTAATTAATTAATTAATTAATTAATTAATTAATTA 975
OY 961 AAGGAAGTAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 1017
DB 976 AAGGAAGTAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 1032

RESULT 6
AAL43250
ID AAL43250 standard; DNA; 1043 BP.
AC AAL43250;
DT 22-AUG-2002 (first entry)
DE Rhizopus arrhizus endoglucanase-related codon-optimised DNA sequence.
XX Zygomyces-originated endoglucanase; cellulose binding domain;
KM fibre processing; waste paper de-inking; paper pulp; ds; gene.
XX Rhizopus arrhizus.
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OS Synthetic.  
 XX PN MO200242474-A1.  
 XX PD 30-MAY-2002.  
 XX PF 21-NOV-2001; 2001WO-JP10188.  
 XX PR 21-NOV-2000; 2000JP-0354296.  
 XX PA (MEIJ ) MEIJI SEIKA KAISHA LTD.  
 XX PI Nakane A, Baba Y, Koga J, Kubota H;  
 XX DR WPI; 2002-471729/50.  
 XX DR P-PSDB; AAO15052.  
 PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,  
 PT with effect of endoglucanase activity enhanced in processing fibers,  
 PT deinking waste paper and improving freeness of paper pulp -  
 XX XX  
 PS Example 10; Page 84-86; 109pp; Japanese.  
 CC The invention comprises the amino acid and coding sequences of  
 CC zygomycetes-originated endoglucanase enzymes lacking the cellulose  
 CC inventing domain. The zygomycetes-originated endoglucanase enzymes of the  
 CC invention have enhanced endoglucanase activity. The zygomycetes-  
 CC originated endoglucanase enzymes of the invention are useful for  
 CC processing fibres, de-inking waste paper and improving the freeness of  
 CC paper pulp - which is particularly applicable in detergent compositions.  
 CC The present DNA sequence represents an endoglucanase-related gene  
 CC sequence of the invention.  
 XX XX  
 SQ Sequence 1043 BP; 212 A; 370 C; 291 G; 170 T; 0 other;

Query Match 58.5%; Score 594.6; DB 24; Length 1043;  
 Best Local Similarity 74.0%; Pred. No. 1.4e-170;  
 Matches 753; Conservative 0; Mismatches 264; Indels 0; Gaps 0;

QY 1 ATGAAGTTATTAATCTATGCTCTTCCGCTCTTGGCTCGCCCTGGTACTGAATG 60  
 DB 16 ATGAAGTTATTAATCTATGCTCTTCCGCTCTTGGCTCGCCCTGGTACTGAATG 75  
 QY 61 GCCTTGTGCTCTGAATGATCAATTTGATGTCATGTCGTGTAAGAACTGGAATGCG 120  
 DB 76 GCCTCGCGCTGATGCTCTCAAGCTCTACGACAGTGGCGGAAAGAACTGGAATGCG 135  
 QY 121 CCTACTTGTGTGATCTGATCACTGTAAAGTAAGCAACGATTACTCTCAATGT 180  
 DB 136 CCACCTGTGCGAGAGCGGCTCGAAGGTCTCGAATGACTACTACAGCAAGTGC 195  
 QY 181 CTTCCTCTGGAAGCAATGCAATTAATCTTGAAGTGTCTCAAGAGACTACCACT 240  
 DB 196 CTGCGAGCGGCTCTCTGGGAAACAGTCAGAGAGTGGCCCAAGAAAGCAAGAC 255  
 QY 241 GCTGCTCAAGAAAGACTACTACCGCTGCTCATTAAGAAAGCTACACTGCTCTGTAAG 300  
 DB 256 GCTGCCCAAGAAAGCAAGCAAGCGCGCTCACAAAGAAAGTACAGACGCTCCGCAAG 315  
 QY 301 AAGACTCAAGCTGTGCGAAGGCTTCACCCCTTCTAACTCTAGCTAGCTCCAGCGG 360  
 DB 316 AAGACCAAGACCGTGGCAAGGCTTCGACTCGTCAACTCGAGCACTGCTCTTGGGA 375  
 QY 361 AAATATTCCGCTGTCTCTGTGTGCTCTGTGTAAACGGTGTCACTACTCTTATTGGAT 420  
 DB 376 AAGTACAGCGCTGTCAAGGCGGTGCTAAGGCGCAAGCGGCTCACTACCCCTACTGGAC 435  
 QY 421 TGTCTTAAGGCTCTCTAGTGGCCCGGTAAAGGCAATGTCAAGTTCTCTGTCAAGTCC 480  
 DB 436 TGTCTGAAGGCTCTCTGTGCTGTGCTCGGCAAGGCTAACTCAAGCTGCTGTCAAGTCC 495  
 QY 481 TGTAAACAAGATGTGTCACTGCGCTTAAGTACAGCAATGCCAAAGTGTGTAAAGGT 540  
 ||||||| ||||||| ||||||| ||||||| ||||||| ||||||| ||||||| |||||||

DB 496 TGCACAGAGACGGCTCAACCGCTTTAGGACTCCAAAGCCAGTCCGGCTGCAACGGC 555  
 QY 541 GGTAAAGTTATTAATCTATGCTCTTCCGCTCTTGGCTCGCCCTGGTACTGAATG 600  
 DB 556 GGTAAAGTTATTAATCTATGCTCTTCCGCTCTTGGCTCGCCCTGGTACTGAATG 615  
 QY 601 GGTTCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 660  
 DB 616 GGTTCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 675  
 QY 661 GAACCTACTTCACTTCACTTCACTTCACTTCACTTCACTTCACTTCACTTCACTTCA 720  
 DB 676 GAACCTACTTCACTTCACTTCACTTCACTTCACTTCACTTCACTTCACTTCACTTCA 735  
 QY 721 ACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 780  
 DB 736 ACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 795  
 QY 781 GGTGTTGTTAATTTTCAATGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTG 840  
 DB 796 GGTGTTGTTAATTTTCAATGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTG 855  
 QY 841 TCAAGTACGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 900  
 DB 856 TCAAGTACGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG 915  
 QY 901 GCTGTTGTTAATTTTCAATGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTG 960  
 DB 916 GCTGTTGTTAATTTTCAATGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTG 975  
 QY 961 AAGAAAGTTACTGCTGCTTAAAGAAATCACCGCCAGACAGTGTGTTCAAGAAATTA 1017  
 DB 976 AAGAAAGTTACTGCTGCTTAAAGAAATCACCGCCAGACAGTGTGTTGTTCAAGAAAT 1032

RESULT 7  
 AAA62728  
 ID AAA62728 standard; DNA; 1083 BP.

XX AAA62728;  
 AC 25-SEP-2000 (first entry)  
 DT 25-SEP-2000 (first entry)  
 XX Endoglucanase nucleotide sequence 3.  
 DE Endoglucanase; cellulose breakdown; produce pulp; papermaking;  
 KW animal foodstuff; ss.  
 XX Rhizopus oryzae.  
 OS  
 XX WO200024879-A1.  
 PN 04-MAY-2000.  
 PD 25-OCT-1999; 99WO-JP05884.  
 PF 23-OCT-1998; 98JP-0302387.  
 XX  
 XX (MEIJ ) MEIJI SEIKA KAISHA LTD.  
 XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;  
 XX Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;  
 XX WPI; 2000-365117/31.  
 XX P-PSDB; AAB09823.  
 DR Endoglucanases of fungal origin with high activity under alkaline  
 PT conditions for production of paper pulp and animal feedstuffs -  
 PT Claim 44; Page 113-115; 180pp; Japanese.  
 PS  
 XX This sequence encodes an endoglucanase protein. The invention relates  
 CC to an endoglucanase of fungal origin which can completely break down





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Db      1 ATGAATCTTCACTTGGCTCTCGGCTATCTTGGCACTTCCGTCGTTACTGAAATG 60
QY      61 GCGCTGCTGCTGATGATGACCAATTTGATGCAATGTGTGTGTAAGAACTGGAATGGC 120
Db      61 GCCCAATGCTGCTGATGATGACCAAGGCTTACTACCAATGTGTGTGTAAGAACTGGAATGGC 120
QY      121 CCGACTTGTGTGATCTGGATCCACCTG-----TAAAGTAAGCAACGATTACTACTCT 174
Db      121 CCGACTGCTGTGATCTGGATCCACCTG-----TAAAGTAAGCAACGATTACTACTCT 180
QY      175 CAATGCTTCTCTGTAAGCACTGCG-----AATTAATCT 210
Db      181 CAATGCTTCTCTGTAAGCACTGCG-----AATTAATCT 240
QY      211 TCTGAAGTGTCTCAAGAAAGTACCACTGCTGCTCACAAGAG---ACTTACTCCGCT 267
Db      241 ACTGAAGTGTCTCAAGAAAGTACCACTGCTGCTCACAAGAG---ACTTACTCCGCT 300
QY      268 GCTCATTAAGAAAGTACCACTGCTGCTGCTGTAAGAAAGTACCACTGCTGCTGCTGCT 327
Db      301 GCGCTTAAGAAAGTACCACTGCTGCTGCTGTAAGAAAGTACCACTGCTGCTGCTGCT 360
QY      328 A-----CCCTTCTAATCTGCTGCTGCT 351
Db      361 AAGAAAGCACTACTACTAAGAAAGGCTTCTAAGAAAGGCTTCTGCTGCTGCTGCTGCT 420
QY      352 TCCAGGGGCAAAATTTCCGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 411
Db      421 GCTTCTAAGAAAGTACCACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 480
QY      412 TATTGGATGCTGTAAGGCTCTGTAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 471
Db      481 TACTGGATGCTGTAAGGCTCTGTAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 540
QY      472 GTCAAGTCTGTAAGAAAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 531
Db      541 GTTGGCTCTGTAAGAAAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 597
QY      532 TGTAAAGGCTGTAAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 591
Db      598 TGTGTGTGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 657
QY      592 CTTCGCTATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 651
Db      658 CTTCGCTATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 717
QY      652 TCTTGTGTGTAAGTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 711
Db      718 GCTCTGTTTCAAGTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 777
QY      712 GTCACTAAGCACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 771
Db      778 GTAAACCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 837
QY      772 CCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 831
Db      838 CCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 897
QY      832 GGTGGGGGCTCAAGATCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 891
Db      898 GGTGGGGGCTCAAGATCGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 957
QY      892 GCACTCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 951
Db      958 GCGCTTAAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1017
QY      952 ATGACTTAAGCAAGATTAAGTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1011
Db      1018 ATGACTTAAGCAAGATTAAGTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1077
QY      1012 AATAAA 1017

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Db      1078 AATAAA 1083
RESULT 9
AAA62729
ID      AAA62729 standard; DNA; 1017 BP.
XX
XX
AC      AAA62729;
XX
DT      25-SEP-2000 (first entry)
DE      Endoglucanase nucleotide sequence 4.
XX
XX      Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KM      animal feedstuff; ss.
XX
OS      Nucor circlineolides.
PN      WO200024879-A1.
XX
PD      04-MAY-2000.
XX
XX      25-OCT-1999; 99WO-UP05884.
XX
XX      23-OCT-1998; 98UP-0302387.
PA      (MEIJ) MEIJI SEIKA KAISHA LTD.
PI      Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI      Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
XX      WPI; 2000-365117/31.
DR      P-PSDB; AAB09824.
XX
PT      Endoglucanases of fungal origin with high activity under alkaline
PT      conditions for production of paper pulp and animal feedstuffs -
XX
XX      Claim 44; Page 118-119; 180pp; Japanese.
XX
CC      This sequence encodes an endoglucanase protein. The invention relates
CC      to an endoglucanase of fungal origin which can completely break down
CC      purified cellulose at a concentration of less than 1mg protein/litre,
CC      and produces more than 50% breakdown of cellulose at pH 8.5. The
CC      invention includes endoglucanase protein sequences (see
CC      AAB09825-B09830), endoglucanase nucleotide sequences (see
CC      AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC      identification of the endoglucanase sequences, and in the construction of
CC      vectors containing the polynucleotides. The endoglucanase enzymes are
CC      used for the production of pulp for papermaking and for the production of
CC      animal feedstuffs.
XX
SQ      Sequence 1017 BP; 233 A; 255 C; 236 G; 293 T; 0 other;
Query Match 41.1%; Score 417.6; DB 21; Length 1017;
Best Local Similarity 67.8%; Pred. No. 1,2e-116;
Matches 655; Conservative 0; Mismatches 284; Indels 27; Gaps 4;
QY      67 GCTGCTGAATGTAAGCAATTTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 126
Db      64 GCTGCTTCTTCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 123
QY      127 TGTGTGAATCTGATCACTG-----TAAAGTAAGCAACGATTACTACTCAATGT 180
Db      124 TGTGTGAAGTGTCTCTACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 183
QY      181 CTTCCTCTGGAAGCACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 233
Db      184 CTTCCTGGAATCCACAGTAAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 243
QY      234 --TACCACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 291
Db      244 AAGACATCTACTCAACCGCAAGGCTACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 303

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XX 23-OCT-1998; 98JP-0302387.  
 PR (MEIJ) MEIJI SEIKA KAISHA LTD.  
 XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;  
 PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;  
 XX WPI: 2000-365117/31.  
 DR P-PSDB; AAB09826.  
 XX Endoglucanases of fungal origin with high activity under alkaline  
 PT conditions for production of paper pulp and animal feedstuffs -  
 XX Claim 44; Page 128-129; 180pp; Japanese.  
 XX This sequence encodes an endoglucanase protein. The invention relates  
 CC to an endoglucanase of fungal origin which can completely break down  
 CC purified cellulose at a concentration of less than 1mg protein/1litre,  
 CC and produces more than 50% breakdown of cellulose at pH 8.5. The  
 CC invention includes endoglucanase protein sequences (see  
 CC AAB09825-B09830), endoglucanase nucleotide sequences (see  
 CC AAB62726-A62732) and primers (AAB62733-A62802) which are used in the  
 CC identification of the endoglucanase sequences, and in the construction of  
 CC vectors containing the polynucleotides. The endoglucanase enzymes are  
 CC used for the production of pulp for papermaking and for the production of  
 CC animal foodstuffs.  
 XX Sequence 1041 BP; 225 A; 352 C; 248 G; 216 T; 0 other;  
 SO  
 Query Match 29.9%; Score 304.2; DB 21; Length 1041;  
 Best Local Similarity 59.9%; Pred. No. 4.4e-82;  
 Matches 616; Conservative 0; Mismatches 353; Indels 60; Gaps 4;

QY 37 GCTCTCGCCCTCGTACTGAAATGCGCTCTGCTGTAATGTAACAAATGTTATGTCGA 96  
 DB 25 GCCCTTCCTCGCTGCGAGCTCCACTTACGCTGTAATGTAACAAAGGCTATGCGCAG 84  
 QY 97 TGTGTGTGAAGAACTGGAATGCGCTTCTGTTGTGAATGTGATCCACTGTA-- 153  
 DB 85 TGTGTGTGAAGAACTGGAATGCGCTTCTGTTGTGAATGTGATCCACTGTTGTGTGT 144  
 QY 154 ---GTAGCAAGATTAATCTCTCAATGCTCTTCCCTGTGGAAGCAATGCAATTAATCT 210  
 DB 145 GCCCAAAACAGAGTGTGTAATCTCTCAATGCTCTTCCCTGTGGAAGCAATGCAATTAATCT 204  
 QY 211 TCTGAAAGTGTCTACAAAGAACTCACTGCTGTCTCAAGAAAGTCTACTACGCTGCT 270  
 DB 205 AAGACCAACCAACCAACCAACCAAGGCTGCACTACCAACCAAGGCTGCTGCTACCAAC 264  
 QY 271 CATTA--AGACTACCACT 288  
 DB 265 ACCAAGGCCAACCAACCAACCAACCAAGGCTGCACTACCAACCAAGGCTGCTACCACT 324  
 QY 289 GCTCTGTGTAAGAACTGGAATGCGCTTCTGTTGTGAATGTGATCCACTGTA-- 348  
 DB 325 ACTTACCAACCAACCAACCAACCAAGGCTGCACTACCAACCAAGGCTGCTGCTACCACT 384  
 QY 349 AGCTTCAAGGCAAAATATCCGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCT 408  
 DB 385 TCTTCCCAACCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCT 444  
 QY 409 CGTTATTTGGGATTTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCT 468  
 DB 445 CGCTATTTGGGATTTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCT 504  
 QY 469 CCTGTCAAGTCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAG 528  
 DB 505 CCTGTCAAGTCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAG 561  
 QY 529 GGCTGTAAAGGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAGGCTGCTGTAAG 588  
 DB 562 GGTTGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 621

QY 589 AACCTTGCTTATGTTTGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 648  
 DB 622 GACCTTGCTTATGTTTGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 681  
 QY 649 TGTCTTGTGTTGCAACTTACTTCTTCACTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCT 708  
 DB 682 TGGCGCTGTGCAAGCTTACTTCAACCAACCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 741  
 QY 709 CAAGTCACTTAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 768  
 DB 742 CAGGTCAACCAACCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 792  
 QY 769 ATGCGCGGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 828  
 DB 793 ATGCGCGGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 852  
 QY 829 GACGCTTGGGCTCAAGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 888  
 DB 853 GATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 912  
 QY 889 TCCGCACTTCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 948  
 DB 913 ACCCACTTCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 972  
 QY 949 ACATGACTTCAAGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1008  
 DB 973 GAGGTCACTTCAAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1032  
 QY 1009 AGAAATTA 1017  
 DB 1033 CGCAAGTAA 1041

RESULT 14  
 AAL43249  
 ID AAL43249 standard; DNA; 1041 BP.  
 XX AAL43249;  
 XX 22-AUG-2002 (first entry)  
 XX phycomyces nitens endoglucanase-related coding sequence.  
 XX zygomycetes-originated endoglucanase; cellulose binding domain;  
 XX fibre processing; waste paper de-linking; paper pulp; ds; gene.  
 XX phycomyces nitens.  
 XX WO200242474-A1.  
 XX 30-MAY-2002.  
 XX 21-NOV-2001; 2001WO-JP10188.  
 XX 21-NOV-2000; 2000JP-0354296.  
 XX (MEIJ) MEIJI SEIKA KAISHA LTD.  
 XX Nakane A, Baba Y, Koga J, Kubota H;  
 XX WPI: 2002-471729/50.  
 XX P-PSDB; AAO15057.  
 XX Cellulose-binding domain-lacking zygomycetes-originated endoglucanase,  
 PT with effect of endoglucanase activity enhanced in processing fibers,  
 PT deinking waste paper and improving freeness of paper pulp -  
 XX Disclosure; Page 81-83; 103pp; Japanese.  
 CC The invention comprises the amino acid and coding sequences of  
 CC zygomycetes-originated endoglucanase enzymes lacking the cellulose  
 CC binding domain. The zygomycetes-originated endoglucanase enzymes of the

invented have enhanced endoglucanase activity. The *xygomycetes*-originated endoglucanase enzymes of the invention are useful for processing fibres, de-linking waste paper and improving the fitness of paper pulp - which is particularly applicable in detergent compositions. The present DNA sequence represents an endoglucanase-related gene sequence of the invention.

**SQ** Sequence 1041 BP; 225 A; 352 C; 248 G; 216 T; 0 other;

Query Match	29.9%	Score	304.2	DB	24	Length	1041
Best Local Similarity	59.9%	Pred	No. 4.4e-82				
Matches	616	Conservative	0	Mismatches	353	Indels	60
						Gaps	4

QY	37	GCTCGCCCTGCGATACATAAATGGCTCTGCGCGTAATATGCAATATGATATGGTCA	96
Db	25	GCCCTTCTCTGCTGCCAGCTCCACTTAACGCTGCTGAATGCAAGCCATATGGCCAG	84
QY	97	TGTGTGATGAACAATCGAATAGTACCCTTACTTGTGTGAATCTTGATCCACTGTAA--	153
Db	85	TGTGTGTGCAAGATGTGGACTGTGCCCACTGCTGCACCTCCGGCTTCACTGTATAGGT	144
QY	154	---GTAACCAACGATTAATCTACTCTAAATGTCCTCCCTGGAAGCAGTGGCAATAATCT	210
Db	145	GCCGAAACAAAGATGTGACTCTCAAGTATATCCCAAGATCAAGTCCAGGGATACCCC	204
QY	211	TCTGAAGTGTCAACAAGAAAGTCACTCACTGTGCTCAACAAGAAAGTCACTACGGTGTCT	270
Db	205	AAGACCAACAACCAACCAACAAGGCTGCACTAACAACAAGCTCCTGTCAACAC	264
QY	271	CATAA-----AAAGTACCACT	288
Db	265	ACCAAGGCCAACCAACAACAACAAGGCCCTGTACCAACAACAAGGCCACTACT	324
QY	289	GCTCCTGTAAAGAAACTCACTGTGTGCAAAAGTCCACCCCTTAATCTAGCTCT	348
Db	325	ACTACCAACAACAACAACAACAAGACCAACAACAAGGCTGTCCACCAACAACCTCC	384
QY	349	AGCTTCAGGGCAAAATATCCGCTGTCTGTGTGTGCTCTGTGAACGGTCACTACT	408
Db	385	TCTTCCAAACATGGCTACAGCCCAATTTCTGTGGGTCTTCTGTGAAGCGTCCCACTACC	444
QY	409	CGTATTGGGAATGCGTATAGGCTCTCTAGTGTGCGCGTAAAGCCAAATGTCAGTTCT	468
Db	445	CGCTACTGGATTTGTCAGAGCCCTTTTCGCTTGGGAAGAAAGGCTTCTGTAACTAAG	504
QY	469	CCTGTCAAGTCCCTGTAAACAAGATGATGTCACTGCCCTTAAGTGAAGCAATGCCAAAGT	528
Db	505	CTGTATATCACTGTGTCCAAGGATGTGTCAGCCGCTCGGTTCCG---ATGTCCAGAGC	561
QY	529	GGCTTAAACGGTGTAAACATTACATGTGTAAACGACAACAACCTTGGGCTGTAAACGAC	588
Db	562	GGTTCGTCGGGGCGAGGCCCTAATGTCAAATGACAAACAGCCCTGGGGTGTTCAAATGAC	621
QY	589	AACCTTGGCTATGTTTTCGTCGTGTGCAATCAAGTGGTGGTGAATCTCGCTAGTG	648
Db	622	GACCTTGGCTACGGTTTTCGCTGTGCTGCAAGTCTTCGTAAGCGCGGTGCTCTGTGATTTGTC	681
QY	649	TGTTCTTGTTCGAATTACTTTCACCTTCTACTCTGTGTGCTGTAAAGAAAGATGTTGTC	708
Db	682	TGCGGCTGTACGACTTACCTTTCACAACAACATGCTGTGCTGGCAAGATTTGTGCTC	741
QY	709	CAAGTCACTAACAATGTGTGTATCTGTGCTCTCTACTAGTGTCTCACTTGACTTGCACA	768
Db	742	CAGGTCAACAACCGGTATATCTCAACACC-----AACCACTTGAATTTGACG	792
QY	769	ATGCCCGGTGTGTGTGTGTATTTTTCATATGTTTTCACAGCCCAATGGGGTGTCTCCAAT	828
Db	793	ATGCCCGGGGTGTGTGTGTGTACTTCAACGGGTGCAATGCCAAGTGAACAACAACACC	852
QY	829	GACGGTTGGGCTCAAGATACGGTGTATTTCTTTCATCTGAATCTGACTCTTACTTCTCT	888
Db	853	GATGGCTGGGGTCTTCGCTATATGGCGGTATTAAGCTCATTTACAGTGCACAAGCTTCTCT	912

Oy	889	TCGCCACTCCCAAGCTGGTTGTAATGAGATTCACTGGTTCAGAAACGCTGATACCCA	948
Db	913	ACCCAGTTGCAGCGCTGGTTGCAAGTGAGATTCCGATGGTTCCAGAACCGCTGACACCCA	972
Oy	949	AGCATGACTTTCACAGAAATTACCTGTCTCTAAGAGAAATCACCGCCCAAGCAGTGTGTTCA	1008
Db	973	GAGGTACACTTCAAAGCGCTGTACTTGGCTCCGAGATCATTTGCCMAGACTGGTTGGAG	1032
Oy	1009	AGAAATATTA	1017
Db	1033	CGCAATATA	1041

RESULT 15  
AAQ14857  
ID AAQ14857 standard; DNA; 1473 BP.

AC AAQ14857

DT 18-FEB-1992 (first entry)

DE *Fusarium oxysporum* DSM 2672 endoglucanase coding sequence.

KW cellulase; cellulose; ss.

OS *Fusarium oxysporum*.

FH	Key	Location/Qualifiers
FE	000	07 1007

ET 22 /

PN WO9117243-A  
 VV

PD 14-NOV-1991

PF 08-MAY-1991; 91WO-DK00123.

PR 22-APR-1991; 91DK-00007336.

[illegible]

**XX**      **XXXXXXXXXXXX**

PI Hjort CM, Hastруп S

DR WPI; 1991-353765/48.

XX  
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PT detergents for ce

2  
2.  
1  
2.  
3  
3  
3  
3  
3  
3  
3  
3  
3  
3

XX 11-1-13

СС F. oxysporum

CC subjected to PCR amplification using 43kD-specific oligonucleotides

CC See also AAQ14856.

**SQ Sequence 1473 BP;**

Query Match

Matches 369; Conser

QY 380 GTGGTGGCC

Db 143 GTGCTGCTT

440 GCTGGCCCGTAAGCCCAATGTCAGTTCCTCTGTCAAGTCCCTGTACCAAGATGGTCA 499

Db 203 CTTGGAGCGGAAAAGGCTGCTGTCAACAGCCCTGCTTTAACTGTGATTAAGAAACGACAAAC 262

Qy 500 CTGCCCCCTTATGTGACAGCAATATGCCCAAGTGGCTGTAAACGGTGTAAACAGTTAACTGTGA 559

Db 263 CCAATTTCCAAACACCAATATGCTGTCAACGGGTGTGAGGGGTGGGTCTTCGCTTAATGCTTGA 322

Qy 560 ACGACAAACCAACCTTGGGCTGTAAACGCAACACTTGGCTATGATTTGGCTGCTGTGCGCA 619

Db 323 CCAACTACTCTCCCTGGGCTGTCAACGATAGACTTGGCTTACGGTTTGGCTGTCTACCAAGA 382

Qy 620 TCAGTGGTGGTGTGATCTTCGCTGGTGTCTTCTTTGTTTGAATTACTTCACTTCA 679

Db 383 TCTCCGGTGGCTCCGAGGCGACGTTGGTGTGTGCTTGTATGCTTTGACCTTCAACACAG 442

Qy 680 CCTCTGTTGCTGTGAAGAAATGATGTTTCCAACTCACTAACTGTGTGTATCTTGGCT 739

Db 443 GCCCCGTCAAGGGCAAGAAATGATGATGTCACATCCACCAACACTGGAAGGTGATCTCGGCG 502

Qy 740 CCTTACTGTGTCTCACTTTGATCTTGCAAAATCCCGGATGGATGGTGGTATTTTCATG 799

Db 503 ACA-----ACCACTTGATCTCATATGATGCGGAGGTGGTGTGTCTTCTTCACG 553

Qy 800 GTTGTTCACAGCATATGGGGTGTCTCCAAATGACGGTGTGGGCTCAAGATACGGTGTATTT 859

Db 554 GCTCACCTCTGATGTTGG-----CAAGGCTCTCGGGGGGTGCCAGTACGGCGGTATCT 607

Qy 860 CTTCGCAATGCACTGCTCTAGTCTTTCTTTCGCACTCCAACTGTTGTGTAAATGAGAT 919

Db 608 CCTCCCGAAGGAATGTGATGTACTCCCGAGGCTTTCTCAAGCAAGTGTGCCACATGGGAT 667

Qy 920 TCAACTGTTTAAAGAAAGCTGATTAACCAAGACTTAACAAGGAAGTTACTGTCTTA 979

Db 668 TCGACTGGTTTGAAGAACGCGACCACTTCACTTCACTTTAGCAGAGTTCAAGTCCCA 727

Qy 980 AGGAATCAACGCCAAGACAGGTTG 1004

Db 728 AGGCTCTCTGACATCAATGATGATG 752

Search completed: June 17, 2003, 11:48:55  
Job time : 226.839 secs